扁足瓢蜡蝉属分类研究 (半翅目,蜡蝉总科,瓢蜡蝉科)

冉红凡^{1,2} 梁爱萍^{1*} 江国妹¹

- 1. 中国科学院动物研究所 北京 100080
- 2. 中国科学院研究生院 北京 100039

摘 要 对扁足瓢蜡蝉属 Neodurium Fennah (半翅目, 蜡蝉总科, 瓢蜡蝉科) 进行了重新描记,该属目前已知 3 种, 其中 2 新种, 即指扁足瓢蜡蝉 Neodurium digitiformum Ran et Liang, sp. nov. 和平扁足瓢蜡蝉 Neodurium flatidum Ran et Liang, sp. nov.。新种模式标本保存在中国科学院动物研究所。

关键词 半翅目, 蜡蝉总科, 瓢蜡蝉科, 扁足瓢蜡蝉属, 新种, 中国.

中图分类号 Q969.35

扁足瓢蜡蝉属 Neodurium Fennah 隶属于半翅目 Hemiptera 蜡蝉总科 Fulgoroidea 瓢蜡蝉科 Issidae 瓢蜡蝉亚科 Issinae 涩瓢蜡蝉族 Thioniini(梁爱萍, 2005),由 Fennah 于 1956 年建立,模式种为扇扁足瓢蜡蝉 Neodurium postfasciatum Fennah,1956(模式标本产地:中国湖北)。长期以来,该属一直是单型属,无人研究。

对扁足瓢 蜡蝉属 *Neodurium* 进行了重新描记, 并描记 2 新种,同时给出了种检索表。研究标本保 存于北京中国科学院动物研究所 (动物所) 和天津 南开大学 (南开)。

扁足瓢蜡蝉属 Neodurium **Fennah**. 1956

Neodurium Fennah, 1956: 513. Type species: Neodurium postfasciatum Fennah, 1956. By original designation.

属征 额中线长大于宽 (约 1. 2: 1. 0),侧缘近乎直,在触角下内弯至额唇基沟; 脊面略凸出,在中间近额唇基沟处明显凹入,侧尖端区域突出; 中脊基部 3/4 显著; 侧脊弱,在基部明显内弯并在中线处横向汇合。头顶前缘近直角的凸出,后缘呈钝角凹入,侧缘直。头部两侧在复眼和额唇基沟间浅沟。唇基凸出,无隆线。喙伸至中足转节,端各一小凹陷。中胸背板短于前胸背板和头顶的总长,沿中线浅凹陷,中脊弱。前翅爪片缝缺失,M 脉简单。后翅在外缘处深陷成两叶,臀叶缺失,翅脉简单。前足和中足股节扁平; 后足胫节侧面近基部具1小刺、末端具2大刺。

生殖器 雄性, 阳茎浅"U"形, 侧面观侧瓣

二裂叶,腹面中间有两个指向基部并交叉的突起, 抱器三角形。雌性,产卵器第3产卵瓣短粗,显著 凸起,前缘肿胀、并列时形成一透镜形腔。

分布:中国(湖北,云南)。

讨论 扁足瓢蜡蝉属 Neodurium 与 Duriopsis Melichar 和 Flavina Stål 相近,与 Duriopsis 的不同之处在于:唇基无中脊(后者的唇基具中脊),前翅 Sc 脉和 R 脉自基部分离(后者前翅 Sc 脉和 R 脉在基部交叉);与 Flavina 的不同之处在于:前翅爪片缝缺失(后者前翅爪片缝存在)。

扁足瓢蜡蝉属分种检索表

- - 额的侧脊弱但可辨别, 围成一长椭圆区域; 后足刺式: 59 12-2 平扁足瓢蜡蝉 N. flatidum Ran et Liang, sp. nov.

指扁足瓢蜡蝉,新种 N. digitiformum Ran et Liang, sp. nov.

1 扇扁足瓢蜡蝉 Neodurium postfasciatum **Fennah** (图 1~8)

Neodurium postfasciatum Fennah, 1956: 513.

体长: \$5.2~ 5.4 mm, \$\chi\$ 5.5~ 6.0 mm。翅长: \$4.2~ 4.5 mm, \$\chi\$ 4.5~ 4.8 mm。

体褐色。头顶近长方形, 前缘钝角凸出, 后缘近直角凹入, 中线上宽大于长 (2.2:1.0); 边缘脊起, 色深, 中线两侧有近对称的深色斑 (图1)。额暗褐色, 间有黄褐色斑; 中线上长大于宽 (1.2:1.0), 前端狭, 内凹成角度, 近后端阔圆形, 下弯

中国科学院"百人计划"项目(受资助人为通讯作者)及国家基础学科人才培养基金(NSFG J0030092)资助.

通讯作者, E mail: liangap@ ioz. ac. cn

收稿日期: 2005-01-31, 修订日期: 2005-03-28.

成弧度,后端弧形;中脊明显,两侧脊可辨别,围成1个长椭圆区域,脊色稍淡(图2)。唇基暗褐色,基部具黄褐色斑。喙深褐色,中部两侧各有一长淡色带。复眼黑褐色,椭圆形。触角黑褐色。前胸背板淡黄色,前缘圆弧形,后缘略弧形,前缘中部、后缘中部和两侧有深色斑。中胸背板三角形,黄褐色,中脊处色深,两侧角处有深色斑。胸部各节,褐色。腹部背面黑褐色,腹面黄褐色,腹部各节具褐色边缘。前翅暗褐色,前缘近顶角处和近基角处各有一半透明区,翅脉黄褐色(图 3)。后翅黑褐色。足黄褐色,间有黑褐色斑纹,前足股节端部叶状膨胀,具暗褐色黑带,前足胫节具近叶状边缘,后足刺式: 8~18~2; ♀8~15~2。

雄性外生殖器 肛节背面观中部略隆起,肛孔位于中间略近端部(图 5)。抱器侧面观近三角形,基部突出成钩状(图 6)。阳茎浅"U"形,背面观背瓣渐狭;侧面观侧瓣渐狭,两裂叶;腹面观腹瓣端部钝圆;腹面突起剑状。阳茎背面近基部有 1 扇状突起(图 7)。

观察标本:中国湖北,1 å,1♀,神农架,实 洛,920 m,198 F 0 8 2 8,韩寅恒采(动物所);1 å,利川城关,1977-06-26,郑乐怡采(南开)。中 国云南:1♀,芒市,三台山,1955-05-18,杨星池 采(动物所)。

分布:中国 (湖北,云南)。

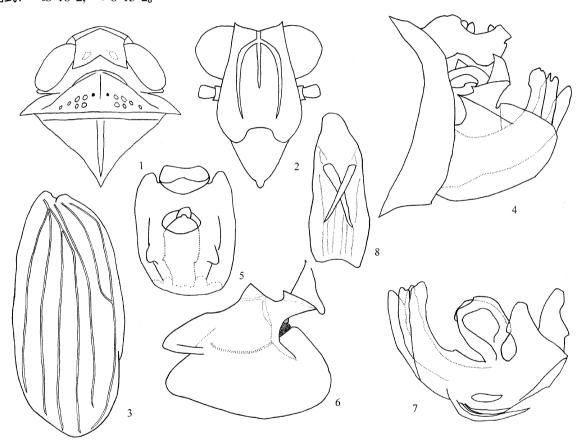


图 1~8 扇扁足瓢蜡蝉 Neodurium postf asciatum Fennah, &

1. 头胸部背面观 (head and thorax, dorsal view) 2. 颜面 (frons) 3. 前翅 (tegmen) 4. 雄性外生殖器侧面观 (male genitalia, lateral view) 5. 肛节背面观 (anal segment, dorsal view) 6. 抱器外侧面 (genital style, lateral view) 7. 阳茎侧面观 (aedeagus, lateral view)

8. 阳茎腹面观 (aedeagus, ventral view)

2 指扁足瓢蜡蝉,新种 Neodurium digitiformum Ran et Liang, sp. nov. (图 9~16)

体长: \$5.2~ 5.8 mm, \$\chi\$ 6.0 mm。 翅长: \$4.2~ 4.7 mm, \$\chi\$ 4.8~ 5.0 mm。

体暗褐色。头顶近五角形,深褐色,具黄褐色

斑; 宽大于中线长 (1.4:1.0), 边缘脊起, 色浅, 后缘在中线两侧各有一浅色圆斑 (图 9)。额黄褐色, 具黑褐色斑; 中线长大于宽 (1.3:1.0), 前端狭, 内凹成角度, 近后端阔圆形, 下弯成弧度, 后端弧形; 前缘至侧脊间黑褐色, 中脊两侧色深, 侧脊向两侧延伸并终止于侧缘, 脊色浅 (图 10)。唇

基淡黄色,基部两侧有黑斑。复眼黑褐色,椭圆形。触角黑褐色。前胸背板暗褐色,具黄褐色斑,前缘弧形,后缘略弧形,中线两侧各有一深色凹陷。中胸背板三角形,黄褐色,中线处凹陷,色深,中线两侧近前缘各有一深色斑。胸部腹面黄褐色。腹部腹面黑褐色,腹部各节具黄褐色边缘。前翅暗褐色,前缘近顶角处有两条半透明带,翅脉色浅(图 11)。后翅翅脉黄褐色。足黄褐色,间有黑色斑纹,前足股节端部叶状膨胀,具暗褐色黑带,胫节具近叶状边缘,后足刺式:8-19-2。

雄性外生殖器 肛节背面观短粗, 肛孔位于中间略近基部, 基部左右各有一个突起; 端部两侧突出, 中间有一方形突出物 (图 13)。抱器侧面观长

三角形,顶缘弧形弯曲,基部突出成钩状(图 14)。阳茎浅"U"形,背面观背瓣渐狭,侧面观侧瓣两裂叶;腹面观腹瓣端部钝圆;腹面突起端部尖,基部宽,近似刀状;阳茎背面近基部有一指状突起(图 15)。

正模 も、中国湖北沙坪、1943-0930、采集人 不详 (动物所)。副模: 7 も も、2♀♀、采集时间、 地点、采集人同正模。

新种与属内已知种扇扁足瓢蜡蝉 N. postfasciatum Fennah 区别在于: 头顶宽不到中线长的两倍; 额的侧脊向两侧延伸并终止于侧缘; 阳茎背面近基部有一指状突起; 后足刺式: 8·19·2。

词源: 新种种名取自其阳茎背面有一指状突起。

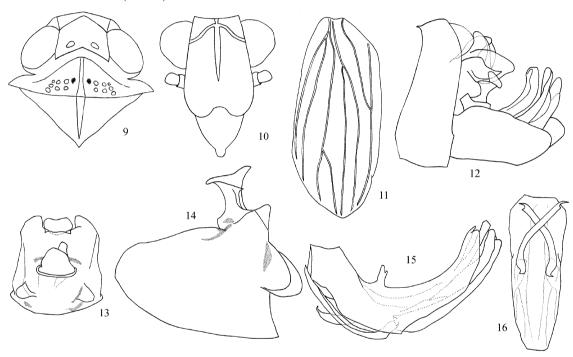


图 9~ 16 指扁足瓢蜡蝉,新种 Neodurium digitiformum Ran et Liang, sp. nov. 5
9. 头胸部背面观 (head and thorax, dorsal view) 10. 颜面 (frons) 11. 前翅 (tegmen) 12. 雄性外生殖器侧面观 (male genitalia, lateral view) 13. 肛节背面观 (anal segment, dorsal view) 14. 抱器外侧面 (genital style, lateral view) 15. 阳茎侧面观 (aedeagus, lateral view) 16. 阳茎腹面观 (aedeagus, ventral view)

3 平扁足瓢蜡蝉 Neodurium flatidum Ran et Liang, sp. nov. (图 17~ 24)

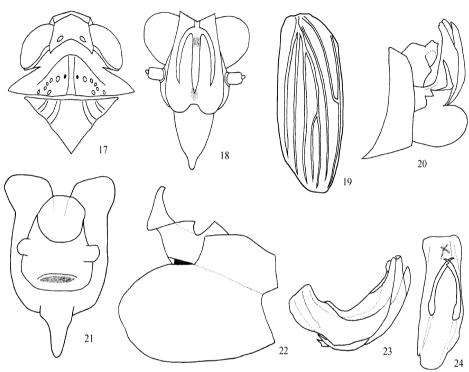
為、体长 4.5~ 4.8 mm, 翅长 3.5~ 4.0 mm。 体黄褐色。头顶近五角形,中线两侧近基部各 有1黑色圆斑;宽大于中线长 (1.65:1.00),侧缘 脊起,色深(图 17)。额暗褐色,中线长大于宽 (1.3:1.0),前端狭,内凹成角度,近后端阔圆形, 下弯成弧度,后端弧形;中脊明显,两侧脊可辨别, 围成 1 长椭圆区域;脊黄褐色,中脊在靠近两侧脊 交叉处下方和近额唇基沟处有黑斑(图 18)。唇基黑褐色,具黄褐色斜横向带,基部有一黄褐色斑。复眼黑褐色,椭圆形。触角黑褐色。前胸背板三角形,中线两侧各有一深色凹陷,中域具小疣突。中胸背板暗褐色,三角形,中线两侧各有两个斜向隆起,两侧角处色深。腹部腹面黑色,腹部各节具黄色边缘。前翅黄褐色(图 19)。足黄褐色,间有黑褐色条纹和斑点,前足股节端部叶状膨胀,并有一暗褐色黑带,前足胫节具近叶状边缘,后足刺式: 39-12-2。

雄性外生殖器 肛节基部有一窄柄;背面观端部宽,二叶,肛孔位于近端部,肛孔上方左右两侧各有一个突起(图 21)。抱器侧面观近四方形,顶缘弧形,基部突出成钩状;背缘基半部向上扩展(图 22)。阳茎浅"U"形,背面观背瓣渐狭,端部凹入;侧面观侧瓣两裂叶;腹面观腹瓣端部钝圆;腹面突起端部尖,后面宽,近似刀状;背面无突起(图 23)。

正模 å, 中国云南, 安宁温泉, 1958-01-09, 程汉华采(动物所); 副模 1 å, 采集时间、地点、 采集人同正模(动物所)。

新种与已知种扇扁足瓢蜡蝉 \mathcal{N} . postfasciatum Fennah 的区别在于: 头顶宽不到中线长的两倍; 阳茎背面无突起; 后足刺式: \mathfrak{D} 12-2。

词源: 新种种名取自其阳茎背面平坦。



REFERENCES (参考文献)

Chan , M L and Yang, G T 1994. Issidae of Taiwan (Homoptera: Fulgoroidea). Zheng Zhong Press , Taiwan.

Chou, I, Iu, J S, Huang, J and Wang, S Z 1985. Economic Insect Fauna of China. Fasc. 36. Homoptera, Fulgoroidea. Science Press, Beijing. [周 尧, 路进生, 黄 桔, 王思政, 1985. 中国经济昆虫志. 第 36 册, 同翅目, 蜡蝉总科. 北京: 科学出版社]

Fennah, R. G. 1956. Fulgoroidea from southern China. Proc. Calif. Acad. Sci., 28 (4): 441-527.

Liang, AP 2005. A proposal to stop using the insect order name "Ho moptera". *Chinese Bulletin of Entomology*, 42 (3): 332-337. [梁 爱萍, 2005. 关于停止使用"同翅目 Homoptera"目名的建议,昆虫知识, 42 (3): 332~337]

Metcalf, Z. P. 1958. General Catalog of the Homoptera. Fasc. IV. Fulgoroidea. Part 15. Issidae. Waverly Press Inc., Baltimore, MD.

THE ISSID GENUS NEODURIUM FENNAH FROM CHINA (HEMIPTERA, FULGOROIDEA, ISSIDAE)

RAN Hong Fan^{1,2}, LIANG Ai Ping¹, JIANG Guo Mei¹

- 1. In stitute of Zoology, Chinese Academy of Sciences, Beijing 100080, China
- 2. Graduate School of the Chinese Academy of Sciences, Beijing 100039, China

Abstract The genus Neodurium Fennah, belonging to the tribe Thioniini of the family Issidae, Fulgoroidea, Hemiptera, was erected by Fennah in 1956 (type species: Neodurium postfasciatum Fennah, 1956) (Hubei, China). It has been a monobasic genus.

This paper deals with the species of Neodurium from China. We redescribe the genus and its three species, including two new species, Neodurium digitiformum Ran et Liang, sp. nov. and Neodurium flatidum Ran et Liang, sp. nov. A key to the species of the genus is given. The specimens studied were from the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS) and Nankai University, Tianjin, China (NU).

Neodurium Fennah, 1956

Neodurium Fennah, 1956: 513. Type species: Neodurium postfasciatum Fennah, 1956. By original designation.

Frons longer than broad in middle line (about 1.2 : 1.0); lateral margins almost straight, incurved to sur ture below level of antennae; disc shallowly convex, strongly depressed in middle near frontoclypeal suture, making lateroapical areas prominent; median carina strongly developed in basal 3/4; sublateral carinae feeble, its base strongly incurved and transversely meeting at middle line. Vertex with apical margin subrectangur lately convex, posterior margin obtusely angulately excavate, lateral margins straight. Head with two sides slightly grooved between eye and front clypeal suture. Clypeus ecarinate, convex. Rostrum slightly surpas sing mesotrochanters, apical segment shorter than sur bapical segment, very obliquely truncate at apex. Pronotum about as long as vertex in middle line, with a small pit beyond each side of median carina. Mesonotum shorter than combined length of pronotum and vertex, median carina feeble and slightly depressed. Tegmina with claval suture absent; M simple. Hind wings deeply incised on apical margin into two lobes; anal lobe absent; veins simple. Pro and mesofemora compressed. Post tibiae with a lateral spine near base and two large distal spines.

Female genitalia. Ovipositor with third valvulae stout, strongly convex, their apical margins turnid and bounding a lenticular cavity when apposed.

Male genitalia. Aedeagus shallowly U shaped, ventrally with two blade like spines in middle, crossed and pointed at base. Genital styles triangular.

Distribution. China (Hubei, Yunnan).

Remarks. *Neodurium* is similar to *Duriopsis* Melichar and Flavina Stål but differs from *Duriopsis* in the clypeus ecarinate (clypeus with median carina in *Duriopsis*), and tegminal Sc and R separated from base (tegminal Sc and R forked at base in *Duriopsis*); and from *Flavina* in absence of claval suture in tegmina (claval suture in tegmina present in *Flavina*).

Key to species of Neodurium Fennah

- 2. Frons with median carina distinct, two lateral carinae reaching to and ending at lateral margins; spinal formula of hind leg: 8 19 2

1 Neodurium postfasciatum **Fennah** (Figs. 1-8) Neodurium postfasciatum Fennah, 1956: 513.

Body length (incl. tegm.): \$5.25.4 mm, \$\gamma\$ 5.5-6.0 mm. Tegmen length: \$4.2-4.5 mm, \$\gamma\$ 4.5-4.8 mm.

Body brown. Vertex quadrate, apical margin obtusely angulately convex, posterior margin subrectangulately excavate; in middle line broader than long (2.2:1.0), margins dark, ridgy, with dark spots in two sides of middle line (Fig. 1). Frons fuscous, with yellowish brown spots, in middle line longer than broad (1.2: 1.0), median carina distinct, two lateral carinae recognizable (Fig. 2). Gypeus fuscous, with yellowish brown spots at base. Eyes dark brown, oval. Antennae dark brown. Pronotum yellowish, apical margin rounded, arced, posterior margin slightly arced, with dark spots in middle of apical margin and in middle and two lateral areas of posterior margin. Mesonotum triangular, yellowish brown, median carina dark, two lateral angles with dark spots. Thorax ventrally yellowish brown. Abdomen dorsally dark brown, ventrally yellowish brown, posterior margin of

each somite brown. Tegmina fuscous, costal margin near apical angle and near basal angle with translucent areas, venation yellowish brown (Fig. 3). Hind wings pale dark. Legs yellowish brown, with dark brown stripes and markings, profemora foliaceously expanded in apical half, with a broad piceous band near apex. Protibiae with subfoliaceous margins. Spinal formula of hind leg: \$8-18-2; \$\varphi\$ 8-15-2.

Male genitalia. Anal segment dorsally convex in middle, anal foramen in middle slightly near apex (Fig. 5). Genital styles in lateral view almost triangular, base convex like a hook (Fig. 6). Aedeagus slightly U shaped. Aedeagus dorsally with a farrlike process near base (Fig. 7).

Specimens examined. China, Hubei Province, 1 &, 1 &, Shiluo, Shennongjia, 920 m, 28 Aug. 1981, HAN Yin Heng (IZCAS); 1 &, Chengguan, Lichuan, 26 June 1977, ZHENG Le Yi (NU). China, Yunnan Province, 1 &, Santaishan, Mangshi, 18 May 1955, YANG Xing Chi (IZCAS).

Distribution. China (Hubei, Yunnan).

Neodurium digitiformum Ran et Liang, sp. nov. (Figs. 9-16)

Body length (incl. tegm.): \$5.2-5.8 mm, \$6.0 mm. Tegmen length: \$4.2-4.7 mm, \$4.8-5.0 mm.

Body fuscous. Vertex dark brown, subquinquan gular, in middle line broader than long (1.4: 1.0); margins paler, ridgy, with round spots in two sides of middle line near posterior margin (Fig. 9). Frons yellowish brown, with dark brown spots, in middle line longer than broad (1.3: 1.0), the areas between apical margin and lateral carinae dark brown, lateral areas of median carina dark, two lateral carinae reaching to and ending at lateral margins, carinae paler (Fig. 10). Clypeus yellowish, with dark spots in both sides at base. Eyes blackish brown, oval. Antennae blackish brown. Pronotum fuscous, with yellowish brown spots, apical margin rounded, arced, posterior margin slightly arced, a dark pit beyond each side of middle line. Mesonotum triangular, yellowish brown; middle line depressed, dark, with a dark mark near apical margin beyond each side of middle line. Thorax in ventral view yellowish brown. Abdomen in ventral view dark brown, posterior margins of each somite yellowish brown. Tegmina fuscous, costal margin with two translucent areas near apical angle; venation paler (Fig. 11). Hind wings with venation yellowish brown. Legs yellowish brown, with dark stripes and spots; profemora foliaceously expanded in apical half, with a broad piceous band near apex; protibiae with subfoliaceous margins. Spinal formula of hind leg: 8 19-2.

Male genitalia. Anal segment stout, anal foramen in middle, slightly near the base (Fig. 13). Genital styles in lateral view long, triangular, base convex like a hook (Fig. 14). Aedeagus dorsally with a finger like process near base (Fig. 15).

Holotype $\,^{\circ}$, China, Hubei Province, Shaping (28. 6° 0′ N, 111. 3° E), 30 Sep. 1943 (IZCAS). Paratypes: 7 $\,^{\circ}$ $\,^{\circ}$ $\,^{\circ}$, $\,^{\circ}$ 2 $\,^{\circ}$ $\,^{\circ}$, same data as for holotype (IZCAS).

Remarks. \mathcal{N} . digitiformum Ran et Liang, sp. nov. is similar to \mathcal{N} . postfasciatum Fennah but differs from the latter in the vertex in middle line less than 2 times broader than long; from with lateral carina reaching to and ending at lateral margins; aedeagus in dorsal view with a finger like process near base; and spinal formula of hind leg \$ 19-2.

Etymology. This species is named for its aedeagus with a dorsal, finger like process near base.

- 3 Neodurium flatidum Ran et Liang, sp. nov. (Figs. 17-24)
- & Body length (incl. tegm.) 4.5-4.8 mm, Tegmen length 3.5-4.0 mm.

Body yellowish brown. Vertex subquinquangular, in middle line broader than long (1.65 1.00), lateral margins ridgy, dark, with dark round spots in two sides of middle line near posterior margin (Fig. 17). Frons fuscous, in middle line longer than broad (1. 3: 1.0), apical margin concave angularly, posterior margin arced, median carina distinct, two lateral carinae recognizable, carinae yellowish brown (Fig. 18). Clypeus dark brown, with yellowish brown oblique transverse strips; with yellowish brown markings at base Eyes dark brown, oval. Antennae blackish brown. Pronotum yellowish brown, triangular, with a dark pit beyond each side of middle line, middle areas verrucate. Mesonotum triangular, dark brown, each side of middle line with two oblique carinae. Abdomen in ventral view dark, posterior margin of each somite yellowish. Tegmina yellowish brown (Fig. 19). Legs yellowish brown, with dark brown stripes and spots, profemora foliaceously expanded in apical half, with a broad piceous band near apex. Protibiae with subfolia ceous margins. Spinal formula of hind leg:

Male genitalia. Anal segment broad in apical half, with two lobes, anal foramen near apex (Fig.

21). Genital styles laterally quadrate, base convex, hook-like (Fig. 22). Aedeagus dorsally without process (Fig. 23).

Holotype & China, Yunnan Province, Hotspring, Anning (24. 9°N, 102. 4°E), 1 Sep. 1958, CHENG Harr Hua (IZCAS). Paratype 1 & China, Yunnan Province, Hotspring, Anning, 1 Sep. 1958, CHENG Harr Hua (IZCAS).

Remarks. \mathcal{N} . flatidum Ran et Liang, sp. nov. is similar to \mathcal{N} . postfasciatum Fennah but differs from the latter in the vertex in middle line less than 2 times wider than long; aedeagus in dorsal view without process; and spinal formula of hind leg 39-12-2.

Etymology. This species is named for its aedeagus flat dorsally without process.

Key words Hemiptera, Issidae, Neodurium, new species, China.